

Levels of reactive oxygen species (ROS) in the seminal plasma predicts the effectiveness of L-carnitine to improve sperm function in men with infertility

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Background:

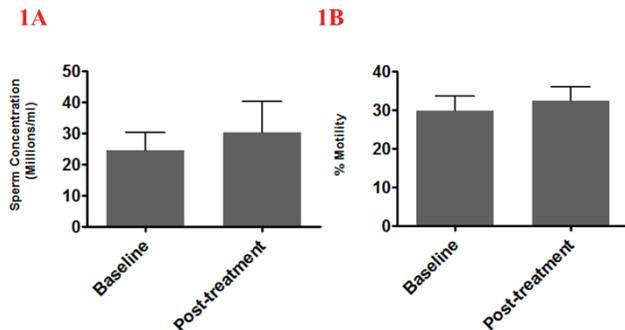
Anti-oxidants and metabolic compounds such as L-carnitine (L-C), Coenzyme Q10 and others are commonly used to treat male infertility.

Some previous reports suggest L-C and acetyl-L-carnitine (ALC) improve sperm quality in men, but the mechanism of action is currently unclear.

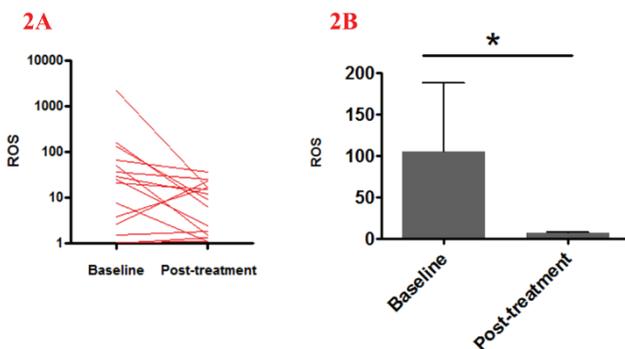
Aim:

Investigate whether carnitines and antioxidants significantly improve sperm function, and whether baseline levels of seminal plasma reactive oxygen species (ROS) predicts its effectiveness.

Results 1: Overall, sperm concentration (1A) and percentage sperm motility (1B) did not change significantly following L-carnitine therapy in men with oligoaesthenospermia (n=29)



Results 2: Overall, L-carnitine reduced ROS markedly. In men with oligoaesthenospermia (2A-B). *p<0.05 vs. pre-treatment using Wilcoxon signed rank test (n=29)



Methods:

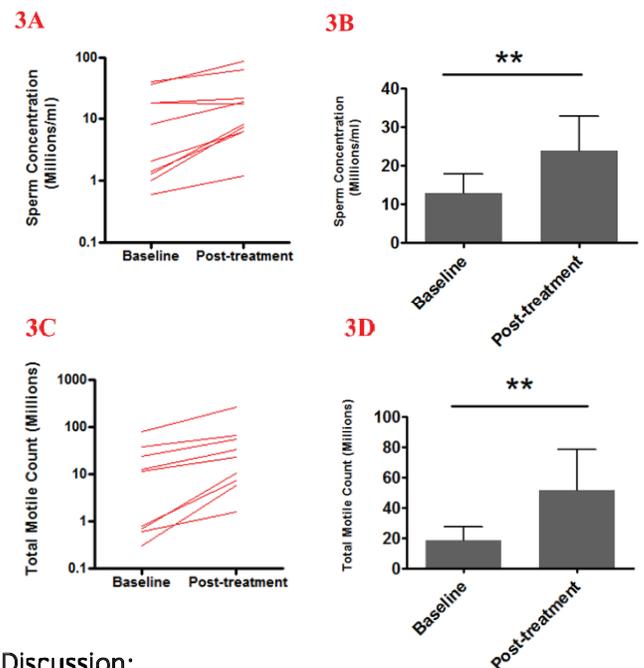
Semen analysis and ROS levels were measured immediately before and following 90 days carnitines

plus antioxidants (Proxeed Plus) treatment in 29 patients fulfilling these criteria:

- infertility > 18 months
- oligoaesthenospermia
- no previous reported anti-oxidant therapy
- no varicocele or intrascrotal pathology

ROS was measured in relative light units per second (RLU/s) using an established chemiluminescence assay (Vessey et al, Fertil Steril 2014;102:1576, Homa et al J Assist Reprod Genet. 2015, 32:

Results 3: In patients with oligoaesthenospermia and pre-treatment ROS >10 RLU/s (n=12), carnitines treatment increased sperm concentration (3A-B) and percentage sperm motility (3C-D). **p<0.01 vs. pre-treatment using Wilcoxon signed rank test.



Discussion:

Men with infertility are increasingly prescribed anti-oxidants, but there remains a paucity of data investigating their effectiveness.

We suggest patients with oligoaesthenospermia and elevated levels of ROS may benefit clinically from L-C, ALC and antioxidants therapy.

These data have important potential implications which warrant further clinical investigation.